Reto Técnico Ingeniero Cloud

# Respuestas Teóricas

## 1. ¿Cuál es la diferencia entre nube pública, privada e híbrida?

Nube pública: Servicios ofrecidos por terceros como Azure, AWS o GCP, donde los recursos se comparten entre múltiples usuarios.  
Nube privada: Infraestructura exclusiva de una organización, con mayor control y personalización.  
Nube híbrida: Combinación de nubes públicas y privadas, con portabilidad de datos y aplicaciones.

## 2. Describa tres prácticas de seguridad en la nube

- Cifrado de datos en tránsito y en reposo  
- Control de acceso basado en roles (RBAC)  
- Autenticación multifactor (MFA)

## 3. ¿Qué es la IaC y cuáles son sus principales beneficios? Mencione 2 herramientas

IaC (Infrastructure as Code) permite definir y aprovisionar infraestructura mediante código.  
Beneficios:  
- Automatización  
- Versionamiento  
- Menor error humano  
  
Herramientas:  
- Terraform: multiplataforma, sintaxis HCL  
- ARM Templates: específicas de Azure

## 4. ¿Qué métricas considera esenciales para el monitoreo de soluciones en la nube?

- Uso de CPU y memoria  
- Latencia y tiempo de respuesta  
- Tasa de errores  
- Disponibilidad/Uptime  
- Métricas de red

## 5. ¿Qué es Docker y cuáles son sus componentes principales?

Docker es una plataforma de contenedores para empaquetar y ejecutar aplicaciones.  
Componentes:  
- Docker Engine  
- Dockerfile  
- Docker Image  
- Docker Container  
- Docker Hub

# Caso práctico

Diseñar una arquitectura nativa en la nube para una aplicación que incluya:  
- Frontend web  
- Backend API  
- Base de datos  
- Almacenamiento de objetos

## Proveedor elegido: Microsoft Azure

Justificación: Azure ofrece integración empresarial, cumplimiento, escalabilidad automática y servicios completamente gestionados.

## Servicios de Azure recomendados:

* **Azure Front Door + WAF**  
  Proporciona un punto de entrada global con balanceo geográfico y protección ante amenazas con firewall de aplicaciones web.
* **App Services**  
  Aloja componentes ligeros o públicos de frontend que no requieren contenedores, integrándose con Application Insights para observabilidad.
* **Azure Container Registry (ACR)**  
  Almacena las imágenes de contenedores. ACR Replica se utiliza para reducir latencia entre regiones y facilitar el despliegue en AKS.
* **Azure Pipelines (CI/CD)**  
  Automatiza compilación, pruebas y despliegue continuo hacia el ACR y AKS.
* **Azure Application Gateway + Load Balancer**  
  Se encarga del enrutamiento y balanceo de carga del tráfico interno hacia los pods en AKS, con capacidades de Layer 7.
* **Azure SQL Server + Azure Redis Cache**  
  Base de datos relacional para almacenamiento estructurado y Redis como cache para mejorar el rendimiento.
* **Private Link**  
  Asegura conectividad privada entre AKS y servicios como SQL Server o Redis sin exposición pública.
* **Azure Monitor + Log Analytics**  
  Monitoreo centralizado de logs, métricas y alertas de toda la infraestructura y servicios desplegados.
* **Key Vault**  
  Administra secretos, claves y certificados utilizados por los microservicios.
* **Application Insights**  
  Instrumentación y análisis de rendimiento de las aplicaciones desplegadas, especialmente del frontend en App Services.

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